

- 26 -

## Claims

1. A method for removing volatile compounds from air which method comprises passing the air over an adsorber comprising a monolithic porous carbon to adsorb the volatile compounds and then passing an electric current through the adsorber to heat the adsorber and drive off at least some of the adsorbed compounds
2. A method as claimed in claim 1 in which the monolithic porous carbon has a resistivity of between 0.1 and 50 ohms/m.
3. A method as claimed in claim 1 or 2 in which the monolithic porous carbon has a cell structure where the channel size is between 0.5 and 1mm and the wall thickness is between 0.5 and 1mm with an open area of between 30 and 60%.
4. A method as claimed in claim any one of claims 1 to 3 in which the monolithic porous carbon has a surface area of at least 700m<sup>2</sup>/g.
5. A method as claimed in any one of the preceding claims in which the adsorber bed comprises a plurality of monoliths electrically connected together in series and/or in parallel.
6. A method as claimed in claim 5 in which the gas flow through the monoliths is in series.
7. A method as claimed in any one of the preceding claims in which the monolith is formed of a plurality of shorter lengths of monolith separated by spaces
8. A method as claimed in claim 7 in which the ends of the shorter lengths of monoliths are connected with a metal connector and the ends of both monoliths which are connected are surrounded with a gas impervious plastic which forms a conduit

- 27 -

between the ends of the monoliths..

9. A method as claimed in claim 8 in which the monolith end connection is directly soldered to the metal connector.

5

10. A method as claimed in claim 9 or 10 in which the ends of the carbon monoliths are copper plated.

10 11. A method as claimed in any one of claims 1 to 10 in which the exit gases from the monolithic porous carbon pass through a granular carbon bed.

12. A method as claimed in claim 11 in which the granular bed comprises granular or extruded activated carbon of particle size of 0.1mm to 2mm and has a volume of up to 15% of the volume of the monolithic bed.

15

13. A method as claimed in any one of claims 1 to 12 in which there are a plurality of adsorbers and, when at least one adsorber has a gas stream containing VOCs passing over it, at least one other adsorber is being heated by having an electric current passed through it and when the exit gases from the adsorbing bed reaches a predetermined  
20 limit the beds are switched.

14. Apparatus for the regenerable adsorption of VOCs which apparatus comprises an adsorber bed which comprises a porous carbon monolith, a gas inlet and a gas outlet for the adsorber bed whereby gas or vapour can be passed over the adsorber bed and  
25 in which there is a means for passing an electric current through the adsorber bed.

15. Apparatus as claimed in claim 8 in which the monolithic porous carbon has a resistivity of between 0.1 and 50 ohms/m.

- 28 -

16. Apparatus as claimed in claim 14 or 15 in which the monolithic porous carbon has a cell structure where the channel size is between 0.5 and 1mm and the wall thickness is between 0.5 and 1mm with an open area of between 30 and 60%.
- 5 17. Apparatus as claimed in any one of claims 14 to 16 in which the monolithic porous carbon has a surface area of at least 700m<sup>2</sup>/g.
18. Apparatus as claimed in any one of the preceding claims in which the adsorber bed comprises a plurality of monoliths electrically connected together in series and/or in  
10 parallel.
19. Apparatus as claimed in claim 18 in which the gas flow through the monoliths is in series.
- 15 20. Apparatus as claimed in any one of the preceding claims in which the monolith is formed of a plurality of shorter lengths of monolith separated by spaces
21. Apparatus as claimed in claim 20 in which the ends of the shorter lengths of monoliths are connected with a metal connector and the said ends of both monoliths  
20 are surrounded with a gas impervious plastic which forms a conduit between the said ends of the monoliths..
22. Apparatus as claimed in claim 21 in which the monolith end connection is directly soldered to the metal connector.
- 25 23. Apparatus as claimed in claim 21 or 22 in which the ends of the shorter lengths of carbon monoliths are copper plated.
24. Apparatus as claimed in any one of claims 14 to 23 in which the exit gases from  
30 the monolithic porous carbon pass through a granular carbon bed.

- 29 -

25. Apparatus as claimed in claim 24 in which the granular bed comprises granular or extruded activated carbon of particle size of 0.1mm. to 2mm and has a volume of up to 15% of the volume of the monolithic bed.

5

26. Apparatus as claimed in any one of claims 14 to 25 in which there are a plurality of adsorbers and means whereby when at least one bed has a gas stream containing VOCs passing over it at least one other bed is being heated and there are means to switch the beds when the exit gases from the adsorbing bed reaches a predetermined

10

limit.